Partnership for

Science & Engineering Practices

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**Workgroup Facilitator Guide**

**Purpose**

This document will guide you in leading a team in enhancing existing science instructional materials. The enhancements will intentionally support students in learning:

* How to construct scientific explanations
* How to use the Engineering Process to solve authentic human problems

**Composition of a Team**

**TASK and Deliverables At- A-Glance**

As a team, you will create modifications to multiple activities in your assigned science instructional material.

By Friday afternoon, your team will have the following:

* At least 2 Explanation Unit Enhancements with rubrics
* At least 1 Engineering Unit Enhancement and a plan for collecting evidence of student learning

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| **Role** | **Activities** |
| Facilitator (you) | Guide tasks  Support participants in their learning  Monitor Deliverables progress  Troubleshoot  Ask questions  Offer content support  Delicately respond to misconceptions  Reinforce norms of collaboration |
| STEM Professional | Offer content support  Respond to misconceptions  Offer authentic STEM practices  Provide real world science and engineering context |
| Participants | Analyze instructional materials  Design enhanced lessons  Learn about explanation & engineering  Collaborate |

**Preparation**

Make sure you are familiar with the following **Facilitation Tools**:

* This Facilitator Guide
* Unit Enhancement Templates
* Protocols for Explanation & Engineering
* Articles on Explanation and Engineering
* Workgroup Assignment Sheet

**Resources**

* Explanation Enhancement Template
* Engineering Enhancement Template
* Scientific Explanation Protocol
* Engineering Design Protocol
* PSEP Wiki
* Text:
  + What’s Your Evidence?
  + Constructing Grade 5-8 Students in Constructing Explanations in Science
* Next Generation Science Standards Site
* Framework for K-12 Science Education
* Common Core State Standards (ELA Science & Technical Subjects)

**Facilitation Pathway**

**Day One: Scientific Explanations**

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| **Time** | **Activity/Protocol** | **Notes** |
| **9am** | **Introductions** |  |
| **9:10** | Clarify the task and deliverables | **Answer any questions** |
| **9:20** | Preview Protocol & Enhancement Template |  |
| **9:30** | Skim Part 1- Front Matter |  |
| **9:40** | **Part 2**: Examine the kit | * **Check how familiar participants are with the given material** * **Vet the predetermined opportunities** * **Encourage STEM professional to identify science concepts and authentic opportunity** |
| **10am** | Establish Work Plan | Identify small work groups and specific tasks  **Be strategic in how you assemble groups** |
| **10:15** | **Part 3:** Clarify the Explanation Opportunity | **Help groups to write the question and then write an explanation using the CER framework** |
|  | Break | **Break as needed** |
| **11:30** | Check In | **Answer questions** |
| **11:45** | Transition to whole group space | **STEM Professionals will be giving talks prior to lunch** |
| **Noon** | LUNCH |  |
| **12:45** | **Part 4-** Assessment Task | **Assist groups in drafting their explanation Assessment Tasks** |
|  | BREAK | **Break as needed** |
| **1:45** | **Part 5**- Learning Sequence | **There will be more time on Friday if groups are not here yet!** |
| **2:15** | Check in with your group | **Check where groups are in work flow**  **Gather feedback on protocol and templates** |
| **2:25** | Transition to Whole Group Space |  |
| **2:30** | Whole Group Check In/Reflection |  |
| **3:00** | Dismissal |  |

**Day Two: *Engineering Process***

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| **Time** | **Activity/Protocol** | **Notes** |
| **9:00** | Share afternoon progress | **Present yesterdays work to your STEM Professional**  **Get feedback** |
| **9:10** | Clarify the task and deliverables | **Answer any questions** |
| **9:20** | Preview Protocol & Enhancement Template |  |
| **9:30** | Skim **Part 1**- Front Matter | **This may take more time since Engineering is new content of most of us** |
| **9:40** | **Part 2**: Examine the kit | * **Vet the predetermined opportunities** * **Encourage STEM professional to identify science concepts and authentic opportunity** |
| **10am** | Establish Work Plan | Identify small work groups and specific tasks  **Be strategic in how you assemble groups** |
| **10:15** | **Part 3**: Clarify the Engineering Opportunity |  |
|  | Break | **Break as needed** |
| **11:30** | Check In | **Answer questions** |
| **11:45** | Transition to whole group space | **STEM Professionals will be giving talks prior to lunch** |
| **Noon** | LUNCH |  |
| **12:45** | Part 4- Assessment Task | **Assist groups in drafting their engineering Assessment Tasks** |
|  | BREAK | **Break as needed** |
| **1:45** | Part 5- Learning Sequence | **There will be more time on Friday if groups are not here yet!** |
| **2:15** | Check in with your group | **Check where groups are in work flow**  **Gather feedback on protocol and templates** |
| **2:25** | Transition to Whole Group Space |  |
| **2:30** | Whole Group Check In/Reflection |  |
| **3:00** | Dismissal |  |

**Day Three: *Finishing Touches***

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| **Time** | **Activity/Protocol** | **Notes** |
| **9:00** | Share afternoon progress | **Present yesterdays work to your STEM Professional**  **Get feedback** |
| **9:15** | Establish tasks & groups for the day | **What work needs to be completed?**  **Who will complete the tasks?**  **Be strategic in how you will use STEM Professional’s time today.** |
|  | Break | **Give your group a break at a point that makes sense.** |
| **11:30** | Check In | **Answer questions** |
| **11:45** | Transition to whole group space | **STEM Professionals will be giving talks prior to lunch** |
| **Noon** | LUNCH |  |
| **12:45** | Final Push  Prepare for sharing with Whole Group | **Complete Unit Enhancements**  **Prepare for sharing** |
| **1:40** | Transition to Whole Group Space |  |
| **1:45** | Final Sharing of Enhancements |  |
| **2:30** | Final Reflections/Evaluation |  |
| **3:30** | Dismissal |  |